

Amendments to the Claims

Claims 1-22 (Canceled)

23. (New) A muffler for a motor vehicle provided on an exhaust passage of an engine installed in a motor vehicle, comprising

a casing main body positioned most outside;

an exhaust gas introducing pipe constituting an end portion of the exhaust passage and having a plurality of small holes in an extending portion extending into said casing main body;

a finisher positioned on an extending line of said exhaust gas introducing pipe and consisting of an inner portion positioned inside said casing main body and an outer portion extending out of said casing main body;

a plurality of pipe members arranged concentrically to the extending portion of said exhaust gas introducing pipe and the inner portion of said finisher and having different radiuses respectively;

a silencer mechanism constituted of a plurality of expansion spaces and a plurality of passages constituting a restriction mechanism which are defined by said pipe members, said exhaust gas introducing pipe, said finisher and said casing main body; and

a valve mechanism provided in an end portion of said exhaust gas introducing pipe and communicating between said exhaust gas introducing pipe and said finisher when pressure of exhaust gas in said exhaust gas introducing pipe has exceeded a specific value.

24. (New) A muffler for a motor vehicle according to claim 23, wherein:

said pipe members is constituted of a first inner pipe arranged concentrically at a specific interval inside said casing main body, and a second inner pipe arranged concentrically at a specific interval inside said first inner pipe, and

said exhaust gas introducing pipe and said finisher are inserted into said second inner pipe in both directions.

25. (New) A muffler for a motor vehicle according to claim 24, wherein said silencer mechanism is constituted of:

a first expansion space defined between said exhaust gas introducing pipe and said casing main body and communicating to said exhaust gas introducing pipe via said small holes;

a first passage defined between said casing main body and said first inner pipe and communicating to said first expansion space;

a second passage defined between said first inner pipe and said second inner pipe and communicating to said first passage via small holes formed in said first inner pipe;

a second expansion space defined between said finisher and said casing main body and communicating to said second passage;

a third passage defined between said second inner pipe and said finisher and communicating to said second expansion space; and

a third expansion space positioned inside said second inner pipe and between said exhaust gas introducing pipe and said finisher, and communicating between said third passage and said finisher,

said exhaust gas introducing pipe is communicated to said finisher via said third expansion space at an opening condition of said valve mechanism.

26. (New) A muffler for a motor vehicle according to claim 25, wherein:

an acoustic material is arranged in a part which is defined by said first inner pipe and said second inner pipe and faces to said third expansion space.

27. (New) A muffler for a motor vehicle according to claim 24, wherein said silencer mechanism is constituted of:

a first expansion space defined between said exhaust gas introducing pipe and said casing main body and communicating to said exhaust gas introducing pipe via said small holes;

a first passage defined between said first inner pipe and said second inner pipe and communicating to said first expansion space;

a second expansion space defined between said finisher and said casing main body and communicating to said first passage;

a second passage defined between said second inner pipe and said finisher and communicating to said second expansion space; and

a third expansion space positioned inside said second inner pipe and between said exhaust gas introducing pipe and said finisher, and communicating to said second passage and said finisher, and

said exhaust gas introducing pipe is communicated to said finisher via said third expansion space at an opening condition of said valve mechanism.

28. (New) A muffler for a motor vehicle according to claim 27, wherein:
an acoustic material is arranged in a space defined between said casing main body and said first inner pipe.

29. (New) A muffler for a motor vehicle according to claim 24, wherein
said silencer mechanism is constituted of:
a first expansion space defined between said exhaust gas introducing pipe and said casing main body and communicating to said exhaust gas introducing pipe via said small holes;
a first passage defined between said casing main body and said first inner pipe and communicating to said first expansion space;
a second expansion space defined between said finisher and said casing main body and communicating to said first passage;
a second passage defined between said second inner pipe and said finisher and communicating to said second expansion space; and
a third expansion space positioned inside said second inner pipe and between said exhaust gas introducing pipe and said finisher, and communicating to said third passage and said finisher, and
said exhaust gas introducing pipe is communicated to said finisher at an opening condition of said valve mechanism.

30. (New) A muffler for a motor vehicle according to claim 29, wherein
an acoustic material is arranged between said first inner pipe and said second inner pipe.

31. (New) A muffler for a motor vehicle according to claim 23, wherein
said pipe members are constituted of:

a first inner pipe arranged concentrically at a specific interval to said exhaust gas introducing pipe, having a downstream side closing bottom surface portion fixed on a circumferential surface of said exhaust gas introducing pipe in a downstream side of said small holes formed on said exhaust gas introducing pipe in one side thereof, and having an opening portion in another side thereof;

a second inner pipe arranged concentrically at a specific interval to said exhaust gas introducing pipe, having an upstream side closing bottom surface portion fixed on a circumferential surface of said exhaust gas introducing pipe in a upstream side of said small holes formed on said exhaust gas introducing pipe in one side thereof, having an opening portion in another side thereof, and having a larger by a specific value than one of said first inner pipe;

a third inner pipe overlapped in a specific area to said first inner pipe, a downstream side end portion of said third inner pipe being connected to said outer portion of said finisher, having a smaller radius by a specific value than one of said inner pipe; and

a fourth inner pipe having a smaller radius by a specific value than one of said third inner pipe, being arranged inside said third inner pipe to constitute a part of said finisher, having an upstream side expanding radius portion fixed on an inner surface of said first inner pipe, a downstream side expanding radius portion fixed on said outer portion of said finisher and a plurality of downstream side exhausting holes formed at specific intervals along a circumferential surface of said downstream side expanding radius portion.

32. (New) A muffler for a motor vehicle according to claim 31, wherein said silencer mechanism is constituted of:

a first expansion space defined by said downstream side closing bottom surface portion of said first inner pipe and said upstream side closing bottom surface portion of said second inner pipe, and communicating to said exhaust gas introducing pipe via said small holes;

a first passage defined between said first inner pipe and said second inner pipe and communicating to said first expansion space;

a second expansion space defined between said second inner pipe and said casing main body and communicating to said first passage;

a second passage defined between said first inner pipe and said third inner pipe and communicating to said second expansion space;

a third passage defined between said third inner pipe and said fourth inner pipe and communicating between said second passage and said downstream side exhausting holes; and

a third expansion space defined inside said fourth inner pipe and communicating to said downstream side exhausting holes and an opening of said finisher, and

said exhaust gas introducing pipe is communicated to the opening of said finisher via said third expansion space at an opening condition of said valve mechanism.

33. (New) A muffler for a motor vehicle according to claim 31, further comprising a fifth inner pipe arranged concentrically outside said second inner pipe, having a closing bottom portion fixed on a circumferential surface of said third inner pipe at a position facing to openings of said first inner pipe and said second inner pipe in a downstream side of an exhausting direction, and having an opening portion in an upstream side of the exhausting direction.

34. (New) A muffler for a motor vehicle according to claim 33, wherein said silencer mechanism is constituted of:

a first expansion space defined by said downstream side closing bottom surface portion of said first inner pipe and said upstream side closing bottom surface portion of said second inner pipe, and communicating to said exhaust gas introducing pipe via said small holes;

a first passage defined between said first inner pipe and said second inner pipe and communicating to said first expansion space;

a fourth passage defined between said second inner pipe and said fifth inner pipe and communicating to said first passage;

a second expansion space defined between said second inner pipe and said casing main body and communicating to said fourth passage;

a second passage defined between said first inner pipe and said third inner pipe and communicating to said first passage;

a third passage defined between said third inner pipe and said fourth inner pipe and communicating between said second passage and said downstream side exhausting holes; and

a third expansion space defined inside the fourth inner pipe and communicating to said downstream side exhausting holes and an opening of said finisher, and

said exhaust gas introducing pipe is communicated to said opening of said finisher via said third expansion space at an opening condition of said valve mechanism.

35. (New) A muffler for a motor vehicle according to claim 31, wherein said downstream side exhausting holes are square shaped holes.

36. (New) A muffler for a motor vehicle according to claim 31, wherein said downstream side exhausting holes are streamline shaped holes.

37. (New) A muffler for a motor vehicle according to claim 23, wherein said pipe members are constituted of:

a first inner pipe arranged at a specific interval inside said casing main body; and

a second inner pipe arranged at a specific interval inside said first inner pipe; and

a third inner pipe arranged at a specific interval inside said second inner pipe and constituted of said extending portion of said exhaust gas introducing pipe.

38. (New) A muffler for a motor vehicle according to claim 37, wherein said silencer mechanism is constituted of:

a first expansion space defined inside said third inner pipe;

a second expansion space defined by said casing main body and said first inner pipe and communicating to said first expansion space via said small holes;

a first passage defined by said first inner pipe and said second inner pipe and communicating to said second expansion space; and

a second passage defined by said second inner pipe and said third inner pipe and communicating between said first passage and an opening of said finisher, and

said exhaust gas introducing pipe is communicated to said opening of said finisher via said first expansion space at an opening condition of said valve mechanism.

39. (New) A muffler for a motor vehicle according to claim 23, wherein
said valve mechanism is constituted of a valve body which opens and closes an end of
said exhaust gas introducing pipe, a spring pressing said valve body to the end of said exhaust
gas introducing pipe, and a means for adjusting pressure which adjusts pressure of said spring.

40. (New) A muffler for a motor vehicle according to claim 39, wherein
said means for adjusting pressure is constituted of a holding portion for holding one end
of said spring and a rotation portion which make said holding portion move to said valve body to
adjust the pressure of the spring, and
said rotation portion can be rotated through said opening of said finisher.